DOCUMENT RESUME

ED 114 322 SO 008 700

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TITLE Comparison of Two Instructional Procedures in Introductory Educational Psychology Classes.
PUB DATE 3 Sep 75
NOTE 22p.; Paper presented at the Annual Meeting of the American Psychological Association (83rd, Chicago, Illinois, September 1975)
AVAILABLE FROM Lawrence W. Sherman, Department of Educational Psychology, Miami University, Oxford, Ohio 45056 (free)

EDRS PRICE MF-$0.76 HC-$1.58 Plus Postage
DESCRIPTORS *Class Size; Course Descriptions; Discussion (Teaching Technique); Educational Innovation; *Educational Psychology; Formative Evaluation; Higher Education; *Instructional Innovation; *Large Group Instruction; Lecture; Small Classes; Small Group Instruction; *Teaching Techniques
IDENTIFIERS Mastery Learning

ABSTRACT

Innovations which were incorporated into large, introductory, educational psychology lecture classes are described and compared to smaller classes that did not make use of the innovations. Four innovative pedagogical techniques are used: (1) a mastery approach, (2) formative evaluation, (3) a modified pyramid-like structure using small group discussion leaders, and (4) supplemental readings. Posttest data from two large lecture classes using these innovations are contrasted with posttest data from the smaller class that did not use them. The results of the posttest and a survey of students' opinions of the innovations indicate that large lecture classes do not have to be a negative educational experience for undergraduate college students. From both a cognitive and affective point of view, students gain more knowledge and prefer the experience of a large class if it is structured in this appropriate manner. Making use of formative evaluation, small group meetings, discussion leaders, supplemental readings, and the mastery approach can efficiently achieve educational goals and enhance the student's experience in a large class structure. (Author/DE)

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Comparison of Two Instructional Procedures in Introductory Educational Psychology Classes

Lawrence William Sherman

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Paper presented at the 83 rd Annual Convention of the American Psychological Convention. Chicago, Illinois, September 3, 1975.

Comparison of Two Instructional Procedures in

Introductory Educational Psychology Classes

One continuing problem in higher education is the financial restrictions effecting departmental staffing. In our particular environment this has been accompanied by increased enrollments. This additional pressure has had its greatest impact upon two introductory courses in General and Educational Psychology which are required by the State of Ohio for teacher certification standards. Nearly 2000 students at our institution pass through these two course offerings each year. Our solution to handling these large numbers of students has been to institute large lecture classes of between 100 and 350 students. The purpose of this paper, then, is to report some innovations which have been incorporated into some undergraduate Introductory Educational Psychology classes. Four pedogogical techniques were used: (1) a mastery approach, (2) formative evaluation, (3) a modified pyramid-like structure using small group discussion leaders (4) and supplemental readings. Post-test data from 2 large lecture classes using the four above innovations is contrasted with a smaller class which did not make use of them.

Three sophomore level classes of Introductory Educational Psychology were lead by two different instructors. The Fall quarter, 1974, class had 201 students who met in four 50-minute sessions per week. The other class, Fall quarter, 1974, had 36 students who met twice weekly in 100-minute sessions. A third Spring quarter, 1975, class had 157 students who met in one 100-minute and two 50-minute sessions per week. All classes lasted for one university quarter of ten weeks plus an eleventh week of final examinations. Sophomore level status or higher plus an introductory general psychology course are the two main prerequisites for this course.

The large lecture classes were based upon a mastery approach incompassing five separate units of material for which there were two possible multiple choice tests for each unit. The first test (here on to be referred to as the "primary" test) was given to the entire class at a regularly scheduled time. Both raw scores and percent of correct item scores were posted within 24 hours after testing. Booklets of thorough explanations for items on the primary tests were then made available to all class members at special evening study sessions proctored by a graduate assistant. One week after the "debriefing" session students, at their option, were allowed to take a second regularly scheduled test (here on to be referred to as the "alternate" test) which covered the same material as did the primary unit tests. This is the "formative" evaluation aspect not made use of in the smaller class. Approximately one-third of the items on the alternate test were the same as those on the primary test; however, even the response choices were scrambled into a different order on these items. Two-thirds of the items on the alternate tests were new items covering the same unit material. If a student's alternate test score was greater than his primary test score, 75% of the difference between the two scores was added to the primary test score for that particular unit. If, however, the alternate test score was less than the primary test score, then the student was not penalized, but given his primary test score as credit for that particular unit. No restriction as to who could take an alternate test was used (i.e., even a high scoring student was free to take the alternate test). No fifth unit alternate test was used as this primary test was scheduled at the time of final examinations. Grades in the large class were primarily based on the average percent of correct item scores for each of the five unit tests.

The large class also included a modified pyramid-like structure in which discussion leaders were responsible to a graduate assistant who was responsible to the instructor. Twenty discussion leaders in the Fall quarter and 32 in the Spring quarter classes were recruited from the previous quarter's classes and directed small groups of between five and ten students in discussions related to a set of 18 supplemental readings. The students in the class received credit for attending a maximum of eight meetings. The discussion leaders who received A and B credit in the previous quarter's class were given two hours of credit for their participation as group leaders. In addition to keeping attendance, the leaders, with the advice of their groups, were responsible for writing two multiple-choice and two true-false questions for each of the 18 readings. Each leader then chose the two best multiple choice and the two best true-false questions from all those submitted for each reading. During the final examinations a 36-item quiz over the readings was given to the entire class. If the percent of correct items on this readings quiz was greater than the average of the five unit tests, it was used in computing the course grade giving a weighting of 10% to the readings quiz and 90% to the average of the five unit tests. If the readings quiz score was less than the five unit test average, then the readings quiz was not used in determining the course grade. Attendance at group discussion meetings was not mandatory; however, a .25% bonus credit was given to students for attending each of the eight discussions for a maximum possible bonus credit of 2%.

The instructor of the two large classes primarily lectured over supplemental material not contained in the text. This took place during three 50-minute sessions per week in the Fall quarter and in the Spring class there was one 100-minute and one 50-minute session. No movies were used. Test items covering the supplemental lectures were contained on the unit tests.

Grades for the large classes, then, were derived from three sources: (1) the average of five unit tests, (2) conditionally one readings quiz score, and (3) a maximum of 2% bonus credit for discussion group attendance. Criterion levels were then applied to these computations to determine grades for the course: 85% - 100% = A, 76% - 84% = B, 68% - 75% = C, 58% - 67% = D and less than 58% = F.

The smaller class made use of summative evaluation procedures which included four separate, regularly scheduled unit test from which the three highest test scores determined the grade for the course. Students were allowed to see their tests after having taken them, and explanations of the test items were made available to them at that time. The students' relative standing in a distribution based on their three best unit test scores was the primary determinant of grades. Grades of A or B were given for scores above the mean while C, D, or F fell below the mean. The instructor of the smaller class both lectured and lead class discussions. Lectures and discussions were both of a supplementary nature or a further clarification of the text. Some movies were also used.

Some commonality did exist between the three classes. Both instructors based their course on a text by Robert F. Biehler (1974), Psychology Applied to Teaching. Test items which were supplied with this text were used by both instructors. Explanations including page number sources for correct answers and the logic of why other options were incorrect accompany Biehler's test items. The instructor of the small class allowed students to review these explanations after each unit test, however, did not give any opportunity to take an alternate test over the units as did the instructor of the large classes. Both instructors used personal items associated with their supplemental lectures.

A department proficiency examination for the Introductory Educational Psychology class comprised of 102 multiple choice items was used as a dependent measure. This test was originally constructed so as to reflect the variety of ways in which this particular course is taught. Five different text books and their accompanying test manuals along with six different instructor's personal test items were used in constructing this proficiency test. Items were selected to represent various topic areas in Educational Psychology such as, Learning, Development, Measurement and Evaluation, Motivation, etc. The proficiency test has been found to have a high degree of reliability with a KR-20 of .893. An efficiency index of .35 (Hofmann, 1975) may likewise be accepted as further evidence of the reliability of the test. In a previous form from which the present test was derived, no statistically significant differences occurred between five different professors' classes taking the test on either the first day (pre-test) of their classes or the last day (post-test). However, statistically significant differences invariably occurred between pre- and post-testings, always with higher gains on the post-testing. Therefore, it is believed the test does measure a gain in cognitive content from having taken the Introductory Educational Psychology class.

Because of inclement weather at the scheduled time for administration of the post-test in the Fall quarter large class, only 121 members out of 201 were available. Nearly the entire small class membership (33 out of 36 students) took the proficiency test at the end of their quarter's work. Pre-testing of the large classes took place on the first day of the quarter; however, no pre-testing of the small class was possible. Realizing the weaknesses inherent in a post-test-only design, it would yet be useful to report the differences between the two classes. It is felt that there may

be evidence to support the equality of these two groups of students based upon previous pre- and post-testing of several similar classes in the past.

Table I presents the mean pre- and post-proficiency test scores for all three classes. Statistically significant differences (see Table 2) were found among the three classes post-proficiency scores by using a simple one-way ANOVA ($F_{(2,300)}=3.815$, $p < .02$). Using a Scheffe post hoc analysis it was further found that the smaller class indeed had a significantly lower ($p < .05$) mean proficiency test score than both of the larger classes. If one can accept the large classes' pre-test mean score as an estimate of what the small class would have done had they taken the pre-test, then one can also see a statistically significant difference between their post-test mean score and the large classes' pre-test score ($t_{(313)}= 5.2650$, $p < .001$). Thus, while all three classes show a significant gain, the larger classes with their accompanying instructional innovations are greater than the small class.

Other interesting results concern correlations among the post-test proficiency scores and the course grades achieved by the large class students (see Table 3). The correlation between the post-test proficiency exam and the grades in the large classes was $r = .48$ ($n = 269$, $p < .001$). A similar correlation exists in the small class of $r = .57$ ($n = 33$, $p < .001$). Likewise, the correlation between the post-test proficiency scores and regularly scheduled cumulative instructor-made unit test scores was examined. In the large classes this correlation was found to be, $r = .49$ ($n = 269$, $p < .001$) and in the small class it was, $r = .65$ ($n = 33$, $p < .001$). Bloom, Hastings and Madaus (1971) cite Carroll (1963) concerning certain expectations of correlations between aptitude and achievement when either the same or different instruction techniques are used in two classes. Specifically,

". . . if the students are normally distributed with respect to aptitude, but the kind and quality of instruction are made appropriate to the characteristics and needs of each student, the majority of students may be expected to achieve mastery of the subjects and the relationship between aptitude and achievement should approach zero." It is felt that the large section with its variety of instructional approaches and concern for mastery achievement, then, should have lower positive correlations between the post-proficiency test scores and either grades or cumulative unit instructor-made test scores. Likewise, the small class using summative evaluation should have higher positive correlations on similar measures, i.e., grades and instructor-made test. Thus, from Table 3 we find that in both the Fall and Spring large class only 33% of the variance being accounted for when predicted by instructor-made tests and 23% when being predicted by grades. Whereas the small class instructor tests account for 42% of the variance in predicting post-proficiency scores and when grades were used, 33%. If one can assume that both groups had similar aptitude distributions, then perhaps method of instruction, specifically the mastery approach with formative evaluation, could have had the effect of decreasing variability in post-test achievement scores. It is recognized that these correlations are among various achievement scores and no real aptitude measure was used. By Carroll's (1963) same logic, however, why could not achievement scores have a similar relationship? In many cases aptitude could very well be a measure of achievement. Bloom et al. (1974) even notes that the relationship between aptitude and achievement should be ".70 or higher," which might be an indicator of similar properties being measured.

The pedogogical techniques used in the large class were inspired by Bloom, et al. (1971). One of the primary reasons for choosing Biehler's (1974) text was its organization which is based on five specific units of instruction with "key point" objectives which are clearly delineated at the beginning and throughout each of the chapters. Biehler's test items and the accompanying item by item explanations lend themselves to Bloom's et al. (1974) "formative evaluation" procedures. The variety of methods of instruction in the larger class included not only the didactic approach of one-way communication traditionally known as the lecture, but also a dialectic method incorporating interactive processes in the small group discussions. This, likewise, is an attempt to fulfill Bloom's et al. suggestions regarding a variety of methods of instruction. Thus, though there are many moderating varisbles which are obviously not controlled for in this analysis of the two classes, the data does suggest favorable support for Bloom's, et al. thesis, that a mastery approach accompanied by formative evaluation and including a variety of methods of instruction is a more efficient approach to achieving cognitive educational goals.

One might, however, question whether there are negative side effects to the large lecture class format. Twelve items from a survey administered to the large classes at exit time shed some light upon the students' reactions to the various innovations included in their class. Six of the items concerned the use of small discussion groups and their accompanying readings. An additional six questions suggested by Biehler were used to probe the students' reactions to the mastery approach. The percent of responses to these questions are presented in the accompanying survey for both the Fall (F%) and Spring (S%) classes and both combined (Total %). Responses to the first question concerning the time allotment for class meetings and the inclusion of small

group discussion overwhelmingly favor inclusion of small group discussion (89.3%), with the majority of students desiring three, 50-minute didactic presentations and one, 50-minute dialectic opportunity in a discussion group per week. Questions 2, 3 and 4 likewise favor the continued use of small group discussions. Even though most students felt that small group discussions afforded an opportunity to relate to other people (question 5), most people (90.8%) felt the discussions sometimes or always related to subject matter otherwise contained in the course (question 6).

Responses to Biehler's questions regarding the mastery approach clearly indicate this to be a more desirable class structure. While students' responses to question 7 regarding exam tension appeared somewhat mixed, a small majority did experience some reduction in test anxiety (56.1%). However, 41.1% didn't feel any reduction. Nevertheless, a clear majority (70.6%) did favor the criterion or working toward a standard approach (question 8). Also, a majority (83%) felt that the standards which were set were appropriate (question 9). The use of frequent short unit exams (question 19) was also found to be highly desirable (96.8%) and students felt they did "learn a lot" (70.3%) because of the demands made by the tests for memorization of the key points in the text (question 11). Moreover, most students (53.3%) felt memorization was necessary in order to really learn material (question 12). However, this twelfth item was the only one on the survey which showed a significant difference between the Spring and Fall quarter classes ($\chi^2_{(3)} = 11.45$, $p < .009$).

In summary it is felt that large classes do not have to be a negative experience for undergraduate college students. Both from a cognitive and an affective point of view, students can gain more knowledge and prefer the

experience of a large class if it is structured in the appropriate manner. It is the belief of this writer that a mastery approach making use of formative evaluation can efficiently achieve educational goals, even in an Introductory Educational Psychology class. The use of discussion leaders, small groups, and supplemental readings may also enhance the students' experience in a large class structure.

References

Biehler, F. Psychology applied to teaching. Boston: Houghton Mifflin Company, 1974.

Bloom, B. S., Hastings, J. T., and Madaus, G. F. Handbook on formative and summative evaluation of student learning. New York: McGraw-Hill Book Company, 1971.

Carroll, J. A model of school learning. Teachers College Record, 1963, 64, 723-733.

Hofmann, R. The concept of efficiency in item analysis. Educational and Psychological Measurement, (in press, Fall, 1975)

Table I

Mean Pre- and Post-test Proficiency Examination Scores for Large and Small Classes

Groups	Pre-Test			Post-Test		
	M	SD	n	M	SD	n
Large Class (Fall)	47.94	8.40	149	62.80	9.33	121
Large Class (Spring)	49.48	9.84	132	60.32	10.46	149
Both Large Classes	48.69	9.12	282	61.43	10.03	270
Small Class	-----	----	---	57.84	11.75	33

Table 2

One-way ANOVA of Three Classes Post-proficiency Test Scores

Source	df	MS	F	P
Between Groups	2	395.00	3.815	P < .02
Within	300	103.54		

Table 3

Large and Small Class Correlations between Post-Proficiency Scores and Instructor's Grades and Instructor Mode Test Scores

Correlations between	Class		
Post-Proficiency scores and:	Large (Fall) n = 121	large (Spring) n = 148	Small n = 33
Grades in Class	.47	.47	.57
Instructor-made test scores	.47	.50	.65

A SURVEY OF OPINIONS RELATED TO THE

SMALL GROUP DISCUSSIONS IN AN INTRODUCTORY EDUCATIONAL PSYCHOLOGY CLASS

One of the unique factors accompanying this particular section of EDP 052 Introduction to Educational Psychology has been the inclusion of small groups with focused discussions based on a set of readings. These small group discussions are not a regular feature in this course! Therefore, we would like to get some feedback regarding your perceptions and experiences in the discussion groups this quarter. We in the Department of Educational Psychology are not thoroughly convinced one way or the other about the value of this kind of small group experience, and at this time would like to obtain some feedback. I hope you would respond to this survey in as honest a fashion as possible. Your opinions and views may be a definite determining factor in future class structures.

F%	S%	Total%	
			1. One of the major purposes of having discussion groups was to fulfill a need expressed by last year's students who felt that they wanted to "talk" more about the course material, rather than the simple, one-way dialogue of listening to the talks or seeing movies normally shown in the courses. Which of the following class structures would you have preferred.
2.6	3.6	3.2	a. Two 100-minute presentations by the instructor per week without any small group discussion. (12:00 - 1:50 PM on Monday and Tuesday: the way this class could have been without discussion groups.)
5.2	9.4	7.5	b. Four 50-minute presentations by the instructor per week.
24.3	28.3	26.5	c. Two 75-minute presentations by the instructor per week plus one 50-minute discussion group.
67.8	58.7	62.8	d. Three 50-minute presentations by the instructor and one 50-minute discussion per week.
$X^2_{(3)}=2.87$, P<.41			
			2. Given the choice of attending a class which included or a class which did not include discussion groups, with the stipulation that either class would include 50 minutes devoted either to presentation or discussion, which one would you choose:
13.2	13.0	13.1	a. No small group discussions--instructor presentations only.
86.8	87.0	86.9	b. 50 minutes of small group discussion per week with 150 minutes of presentation by the instructor.
$X^2_{(1)}=0.03$, P<.87			
			3. Would you recommend to fellow students, <u>if they were given a choice</u> between 2 sections of EDP 052, that they take:
89.5	86.2	87.7	a. the section <u>with</u> the accompanying group discussions.
10.5	13.8	12.3	b. the section <u>without</u> the accompanying group discussion.
$X^2_{(1)}=0.34$, P<.56			
			4. Would you recommend that small group discussions be included in this class in the future?
2.6	1.4	2.0	a. definitely not
18.4	23.2	21.0	b. maybe
78.9	75.4	77.0	c. definitely yes
$X^2_{(2)}=1.22$, P<.54			

F%	S%	Total%	
			5. Which do you feel is a more important objective for the group discussions?
11.4	9.4	10.3	a. The addition and clarification of factual data (a cognitive goal).
83.3	88.4	86.1	b. The opportunity to relate to other people who are in the same situation as yourself--to see what others are thinking and feeling (an affective goal).
5.3	2.2	3.6	c. tutorial, based only upon course content.
$X^2_{(2)}=2.09$, P<.35			
			6. Could you relate the discussion group topics to the course presentation?
6.1	11.7	9.2	a. never
79.8	73.7	76.5	b. sometimes
14.0	14.6	14.3	c. always
$X^2_{(2)}=2.40$, P<.30			
			7. Basing exams on the Key Points identified in the text was intended to reduce pressure and tension. As compared to the pressure caused by exams made up of questions on "unannounced" points in a text, did you feel this was successful?
12.2	23.2	18.2	a. Exam tension was reduced to a considerable extent.
39.1	37.0	37.9	b. Exam tension was reduced some.
46.1	37.0	41.1	c. Didn't feel any difference in degree of anxiety about exam.
2.6	2.9	2.8	d. Felt more pressure with key points approach.
$X^2_{(3)}=5.55$, P<.14			
			8. Using a criterion (e.g. get no more than 2 wrong) approach to grading was intended to reduce competition between students (which is almost inevitable when relative standing grading procedures are used). Did you feel this was successful?
27.4	25.8	26.5	a. Much preferred working toward a standard.
46.9	41.7	44.1	b. Thought criterion approach was somewhat better than relative standing.
20.4	26.5	23.7	c. Didn't see any difference in criterion and relative standing approach.
5.3	6.1	5.7	d. Would prefer a relative standing approach.
$X^2_{(3)}=1.48$, P<.69			
			9. In regard to the criteria which were established for different grade levels this semester--and taking into account that this is a 5-unit course, how did you feel about the requirements for the different grade levels?
3.6	3.1	3.3	a. Felt they were too lenient.
85.7	80.6	83.0	b. Felt they were about right.
7.1	15.5	11.6	c. Felt they were too strict.
3.6	0.8	2.1	d. Felt they were <u>much</u> too strict.
$X^2_{(3)}=6.09$, P<.11			
			10. To put into practice what is known about learning and memory and also in an effort to reduce pressure and tension, exams covering about 100 pages of text were scheduled about every two weeks. What were your reactions to this approach as compared to fewer comprehensive exams such as a mid-term or final?

F%	S%	Total%	
85.2	78.8	81.7	a. Felt frequent short exams were much better than fewer long ones.
13.0	16.8	15.1	b. Felt frequent short exams were a bit better than fewer long ones.
0.9	1.5	1.2	c. Didn't feel frequent exams were any better or worse than fewer tests.
0.9	2.9	2.0	d. Would have preferred three exams on about 200 pages each.

$X^2_{(3)}=2.40$, $P<.49$

11. You were asked to answer test questions from memory on the grounds that this would: (1) encourage overlearning and you would be more likely to remember what you have read--so that you would know what was available in the text for future reference and where to look; and (2) would indicate the degree of your understanding of the Key Points so that you could correct for omissions and misinterpretations. How did you feel about being asked to memorize information about the Key Points?

43.5	40.9	42.1	a. Felt it was legitimate and that it worked--I learned a lot.
30.4	26.3	28.2	b. I didn't like it but it was justifiable since I wouldn't have learned as much otherwise.
25.2	28.5	27.0	c. Think that there should be less stress on memorization.
0.9	4.4	2.8	d. I resented it so much I came to hate the book and the class.

$X^2_{(3)}=3.50$, $P<.32$

12. Taking into account that it is desirable to have students read a text with care and then demonstrate how well they understand what they have read, how do you feel about approaches to testing which place varying emphasis on memorization?

64.9	43.7	53.3	a. Memorization is necessary in order to really learn material.
11.7	22.2	17.5	b. Would have preferred open book exams or the equivalent.
18.0	27.4	23.2	c. Would have preferred answering questions by working at my own pace at home or in the library.
5.4	6.7	6.1	d. Would be better to not have any text or formal assignments; just have the class discuss points they feel are important.

$X^2_{(3)}=11.45$, $P<.009$

EDP 52 Spring Quarter 1975
Dr. Larry Sherman, 120 McGuffey, Phone: 529-6621

This class will be based primarily upon a text book which is: Psychology Applied to Teaching by Robert F. Biehler. Published by Houghton MIfflin Co., N.Y. 1974, 2nd ed

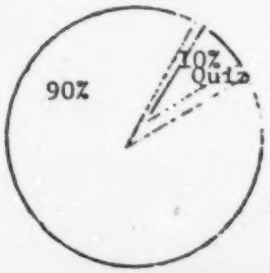
Besides this resource both class lectures and the readings which will be covered in small discussion groups are additional sources. Your grade in this class will be based upon competence or mastery of the course content which may be derived from the above three resources: 1) the text, 2) class lectures, and 3) discussion group readings.
Besides the regular lecture sessions, once per week you will be provided with a series of readings intended as topics for discussion in small groups which will be directed by your peers. These discussion leaders were recruited from the EDP 52 course taught the previous quarter, Fall 1974, and they are all volunteers. They are by no means "master teachers," and should not be thought of as such. Your final exit grade will be computed from three specific areas: 1) your average performance on unit tests, 2) your performance on a quiz covering the discussion group readings, and 3) your attendance at discussion group meetings. The following is a breakdown of these 3 specific areas:

I. Five Unit Tests. Credit
   A. Original tests: Each test will cover a unit of study specified in the "Course Calendar." (There will not be any comprehensive midterm or final exams.) The fifth unit test will be given at the final exam time. The average "percentage of correct" on all five tests will be one of the components upon which your final grade will be calculated. These test scores will contribute 90% to your final grade.
   B. Alternate tests: If your performance on any of the first four "original" tests is not acceptable to yourself you will be given an opportunity to take an alternate form of the tests. A feedback session will follow within one week after each of the first four tests where you may see the correct answers and the rational of why the answers are correct. After this feedback session you will be given an opportunity to take a different test over the same material as the previous test. Approximately 1/3 of the items on this alternate test will be the same as those of the original test. IF your percentage score on this alternate test is higher than that of the original test, 75% of the difference will be added to your score on the original test. If you do as well as or worse than your original test score no change will be made to your original score. This means that you cannot lose by taking an alternate test, you can only gain, but only gain 75% the difference between the two tests. The mathematical formula for this calculation would be: .75 (Alternate - Original) + ORIGINAL It is more advantageous grade-wise to do well on the original tests. The amount of time involved in taking these alternate tests does subtract from the time you should be using to study succeeding units. However, this system is a good "bailing-out" device.

II. Discussion Group Credit.
   A. Attendance: you will be given, gratis, .25% credit for attendance at each of 8 discussion group meetings. This could potentially total up to bonus credit of 2%.
   B. Readings Quiz: There will be an additional quiz over the readings which you will be provided with in the small discussion groups. The percentage of correct items on this quiz will be figured into your final average. This quiz will contribute 10% to your final grade.

Thus, 90% of your final grade will be contributed by your performance on the five unit tests. That is, each of the five tests is worth 18% of your final grade. 10% of your grade will be based on your performance on the quiz over the discussion group readings. An additional 2% bonus credit for attendance at each of the 8 discussion groups meetings will be added to your average perforamnce on the 5 unit tests and the readings quiz.

Figure #1



\+ 2% (potential attendance credit) = GRADE

Mastery Criterion Levels

A	86 - 100 %
B	77 - 85 %
C	69 - 76 %
D	59 - 68 %
F	0 - 58 %

The grading system upon which this course is based would be described by the author of the text, Robert Biehler, as a "MASTERY" system. Theoretically, everyone in the class could get an "A" as the "mastery criterion levels" in figure 1 are not discriminatory (based on a "normal-curve") and if the whole class could get their cumulative scores above 86% then they would all get A's.

Time: 10:00-11:50 Mondays: 10:00 - 11:00 Thursdays

	DATES	
Month	TUESDAY	THURSDAY
MARCH	25	27
APRIL	1	3 Test #1 [Chapters 1-2]
	8	9
	15	17 Test #2 [Chapters 3-4]
	22	24
MAY	29	1 Test #3 [Chapters 5-6-7] Last day to drop is May 2, 1975
	6	8
	13	15 Test #4 [Chapters 8-9-10]
	20	22
	27	29
JUNE	Regularly scheduled final exam time for Test #5 [Chapters 11-12-14]	

Addendum

A last minute analysis of the relationship between aptitude and achievement became available when University officials agreed to release the student's ACT scores. Miami University uses ACT scores in making decisions concerning admissions. Within the select sample of primarily education majors who participated in the three classes a significant correlation exists between their total Grade Point Average (GPA) and their ACT scores ($r = .41$, $p < .001$, $n = 290$). Since ACT scores are generally used to predict academic achievement it would be reasonable to consider this test as an "aptitude" test. Thus to further examine the effects of FORMATIVE versus SUMMATIVE evaluations upon the relationship between aptitutde and achievement, ACT scores were correlated with the post-proficiency scores separately in each of three classes (see addendum TABLE 4). No reliable differences in the correlations were found between the three classes. However, the small class which made use of summative evaluation procedures does account for a larger amount of variation (29%) then the larger classes (24%). Though this is not a statistically significant difference it is in the direction which Bloom, et. al. (1971) would have predicted.

Table 4

Large and Small Class Correlations between Post-Proficiency Scores and GPA and ACT Scores

Correlations between Post-proficiency scores and:	Classes			
	Small n = 22	Large (Fall) n = 104	Large (Spring) n = 123	Both Large Classes n = 227
ACT	.55*	.49**	.49**	.49**

*p < .004
**p < .001

22000